

Claims

- 5 1. A dual bank FIFO memory buffer, comprising:
- a first bank of memory elements operable to buffer memory data;
 - a second bank of memory elements operable to buffer memory data;
 - write control address logic operable to store selected memory data in memory elements with selected addresses;
 - write control timing logic operable to selectively grant write access to the banks of memory elements at predetermined time; and
 - read control logic operable to read data stored in the first and second banks.
- 10 2. The dual bank FIFO memory buffer of claim 1, wherein the memory data is provided by double data rate synchronous dynamic read only memory (DDR SDRAM) operatively connected to the buffer.
- 15 3. The dual bank FIFO memory buffer of claim 1, wherein the write control address logic is operable to determine an element within a bank of memory elements in which selected memory data is to be stored by evaluating rising and falling edges of a strobe signal.
- 20 4. The dual bank FIFO memory buffer of claim 3, wherein the determination of the element in which selected memory data is to be stored further comprises selection of sequential element addresses during sequential strobe cycles.

5. The dual bank FIFO memory buffer of claim 1, wherein the write control timing logic comprises a write pointer associated with each FIFO bank.

6. The dual bank FIFO memory buffer of claim 5, wherein each write pointer is operable to control write access to its associated FIFO bank.

7. The dual bank FIFO memory buffer of claim 6, wherein write access is granted via write pointer only during predetermined time periods when the read data is determined to be valid.

8. The dual bank FIFO memory buffer of claim 7, wherein determination that the read data is valid comprises determination that a programmed expected time delay after issuing a read request has occurred.

9. The dual bank FIFO memory buffer of claim 8, wherein the programmed expected time delay is determined independently for different units of memory.

10. A dual bank FIFO memory buffer, comprising:

a first bank of memory elements operable to buffer memory data;

a second bank of memory elements operable to buffer memory data;

write control address logic operable to store selected memory data in memory elements with selected addresses, the selected addresses determined by evaluation of a strobe signal;

write control timing logic operable to selectively grant write access to the banks of memory elements at predetermined time, the write control timing logic comprising a write pointer associated with each FIFO bank and operable to control write access to the associated bank during periods when read data is determined to be valid; and

read control logic operable to read data stored in the first and second banks.

11. A memory controller, comprising:

a command signal output operable to issue a data read command;

a data input operable to receive read data from a memory; and

a dual-bank FIFO connected between the data input and the memory and operable to buffer the read data, the dual-bank FIFO further comprising:

a first bank of memory elements operable to buffer memory data;

a second bank of memory elements operable to buffer memory data;

write control address logic operable to store selected memory data in memory elements with selected addresses;

write control timing logic operable to selectively grant write access to the banks of memory elements at predetermined time; and

read control logic operable to read data stored in the first and second banks.

12. The memory controller of claim 11, wherein the memory data is provided by double data rate synchronous dynamic read only memory (DDR SDRAM) operatively

connected to the buffer.

13. The memory controller of claim 11, wherein the write control address logic is operable to determine an element within a bank of memory elements in which selected memory data is to be stored by evaluating rising and falling edges of a strobe signal.

14. The memory controller of claim 13, wherein the determination of the element in which selected memory data is to be stored further comprises selection of sequential element addresses during sequential strobe cycles.

15. The memory controller of claim 11, wherein the write control timing logic comprises a write pointer associated with each FIFO bank.

16. The memory controller of claim 15, wherein each write pointer is operable to control write access to its associated FIFO bank.

17. The memory controller of claim 16, wherein write access is granted via write pointer only during predetermined time periods when the read data is determined to be valid.

18. The memory controller of claim 17, wherein determination that the read data is valid comprises determination that a programmed expected time delay after issuing a read request has occurred.

19. The memory controller of claim 18, wherein the programmed expected time delay is determined independently for different units of memory.

20. A computerized information handling system, the system comprising:

- 5 a memory controller;
- a memory;
- a processor; and
- a dual-bank FIFO connected between the memory and the memory controller and operable to buffer read data, the dual-bank FIFO further comprising:
- 10 a first bank of memory elements operable to buffer memory data;
- a second bank of memory elements operable to buffer memory data;
- write control address logic operable to store selected memory data in memory elements with selected addresses;
- write control timing logic operable to selectively grant write access to
- 15 the banks of memory elements at predetermined time; and
- read control logic operable to read data stored in the first and second banks.

21. 2. The dual bank FIFO memory buffer of claim 1, wherein the memory data is

20 provided by double data rate synchronous dynamic read only memory (DDR SDRAM) operatively connected to the buffer.

22. The dual bank FIFO memory buffer of claim 20, wherein the write control address

logic is operable to determine an element within a bank of memory elements in which selected memory data is to be stored by evaluating rising and falling edges of a strobe signal.

5 23. The dual bank FIFO memory buffer of claim 22, wherein the determination of the element in which selected memory data is to be stored further comprises selection of sequential element addresses during sequential strobe cycles.

24. The dual bank FIFO memory buffer of claim 20, wherein the write control timing
10 logic comprises a write pointer associated with each FIFO bank.

25. The dual bank FIFO memory buffer of claim 24, wherein each write pointer is operable to control write access to its associated FIFO bank.

15 26. The dual bank FIFO memory buffer of claim 25, wherein write access is granted via write pointer only during predetermined time periods when the read data is determined to be valid.

27. The dual bank FIFO memory buffer of claim 26, wherein determination that the
20 read data is valid comprises determination that a programmed expected time delay after issuing a read request has occurred.

28. The dual bank FIFO memory buffer of claim 27, wherein the programmed

expected time delay is determined independently for different units of memory.

29. A method of compensating for potential read loop delay timing-induced read errors, comprising:

- 5 selectively granting write access to a bank of memory selected from a multi-bank FIFO of memory elements at determined time via write control timing logic, the write control timing logic comprising a write pointer associated with each FIFO bank and operable to control write access to the associated bank during periods when read data is determined to be valid.

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